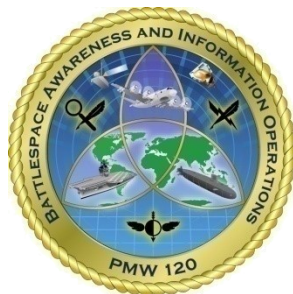
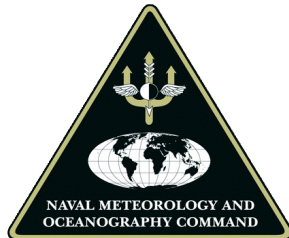


6.4 N2/N6E Project Review

06 Oct 2011

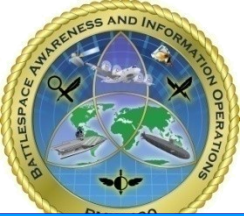


Project: Preparing Tactical Ocean Optical Products for Future Polar-Orbiting Sensors

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Customer: P. Lyon, K. Grembowicz NAVO



Preparing Tactical Ocean Optical Products from Future Polar -Orbiting Sensors



Objective

Deliverables Transitioned FY11-12

Prepare NAVOCEANO's satellite operations tactical optical products from VIIRS- ocean color sensors for Mine Ware, ASW and Spec War.

- VTR for APS Version 4.0 completed
- APS Version 4.0 - Completed OpTest , and transitioned
- APS v4.2 installed at NAVO

Integrate ocean color satellites into operations

- Deliver Operational products from NPP
- Establish Data Stream from satellites
- Extend algorithms & software to new satellites
- Calibrate new satellite sensors with exiting operations
- Validate the products (such as diver visibility

Planned

- VTR for APS Version 4.4 - May 2012
- OpTest version 4.4 - June 2012

FY11 Accomplishments

Funding

-
- NPP Proxy data stream established to NAVO
- Readiness for NPP established at NAVO
 - NAVO processing VIIRS Proxy data for NPP
- MERIS /VIIRS / MODIS processing at NAVO
 - Atm correction upgrade for aerosols
- Global SeaPrisms and optical product validation established
- Evaluated Korean GOCI satellite capability

(\$K)	FY11	FY12	FY13	FY14
J PSS - cal val	180	200	200	200
6.2 Subsurface Optics	630	565		
6.2 Algorithn ensemble	500	500	500	
#1 Develop NPP ocean products	100	50	100	100
#2: APS for NPP and GOCI (VTR)	100	125	125	125
#3 Global Validation network of Optical products	100	160	150	150
#4: Develop GOCI, Sensinel ocean products	100	59	225	225
total	400	394	600	600



Preparing Tactical Ocean Optical Products from Future Polar - Orbiting Sensors



Red hyperlink indicates delays and green indicates on or ahead of schedule (as compared to FY09 DD1498)

	FY09				FY10				FY11				FY12				FY13			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Task #1 Develop real-time ocean products from a proxy and NPP data stream									S			L			D				D	
Task #2 APS for NPP and GOCI (VTR) (Transition)						V3.8 VTR	O		V4.0	V4.2 VTR	O				V4.4 VTR	O				V4.4 VTR
Task #3- Global Validation network of Optical products									S			D				D				D
Task 4-Develop GOCI, Sentinel ocean products										S GOCI		D				D/	S Sen			D

Completed OPTEST – V4.0

GOCI – satellite development 50% behind (funding)

Milestones indicate **V**TR panel-accepted and **O**PTEST - **D**emo L=Launch

Indicate changes from FY10 1498 by highlighting original planned time in red



Preparing Tactical Ocean Optical Products from Future Polar -Orbiting Sensors Transition Summary



- **TRANSITION APPROVAL STATUS:** Automated Optical Processing Systems - v 4.1 in OPTTEST
- **CAPABILITY REQUIREMENTS BASIS:** IORD - for JPSS and ocean optical Products.
 - 4 d coherent picture of the coastal environment (Naval Capability Based Assessment for oceanography for 21st Century EXW) Oct 2009),
 - TACMEMO under development for performance surface for active EO Identification CNO(N841A) 762-0601; 16 October 2009, EO system performance for MCM,
 - Charts
- **INPUTS:** Raw Global Satellite Ocean Data from MODIS, MERIS , NPP, GOCI are processed using AOPS (at NAVO) based on sensor calibration, atmospheric correction and algorithms to retrieve ocean properties.
- **OUTPUTS / PRODUCTS:** Ocean imagery products of changing optical properties (absorption, scattering , diver visibility, vulnerability, and Laser performances.) used to for non-acoustic vulnerability, MCM diving and imaging operations, ocean surveillance and validating circulation. Products assimilated into forecast models (TODS) .
 - New satellites require calibration and validation for continuity within Navy operations
- **ACCEPTANCE CRITERIA:** Accepted VTR for global validation of the satellite derived optical products which meet standard protocols for matchup- data sets. Product acceptance testing is based on inter comparison of optical products retrieved from several satellites (using MODIS products as operational). Acceptance base don different ocean waters seasons.
 - Test panel members from NAVO and NRL is agreed upon and met quarters



Preparing Tactical Ocean Optical Products from Future Polar - Orbiting Sensors



Major Achievements:

- **NPP proxy data developed processed at NAVO - software developed and waiting for NPP data stream**
- **NPP data stream identified , tested (NOAA - GRAVITE CLASS) and AirForce**
- **Software / algorithms applied to NPP sensors**
- **Global Validation sites established for monitoring coastal optical product validation.**
- **Satellite Optical products now assimilated into optical forecast Models**
- **Obtained and Testing Korea “Geostationary Ocean Color Imagery”**



Preparing Tactical Ocean Optical Products from Future Polar - Orbiting NPP - Launch in Oct 25 2011



ifferences of NOAA and NAVY products
quire specific Navy Algorithms and processing

VIIRS proxy data delivered and tested at NAVO

SDR - SDR - EDR software near complete testing .

NAVY requests SDR (Scientific Data records) to develop NAVY pro
Diver visibility
EO system performance (laser systems)
Data assimilation..

ONOPS completed for Cal - val for JPSS /Navy for VIIRS sensors

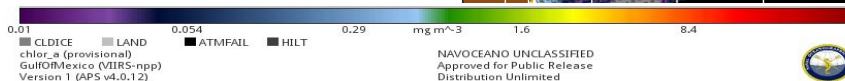
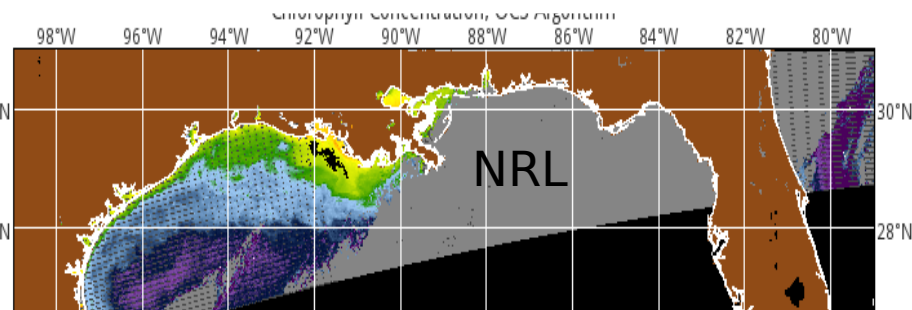
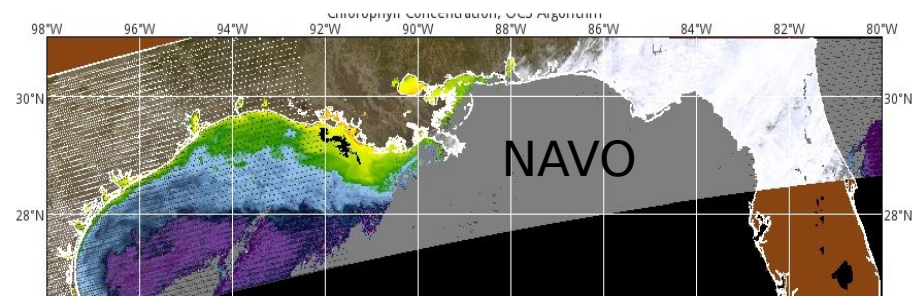
Navy taking responsibility for the Real time capability for VIIRS



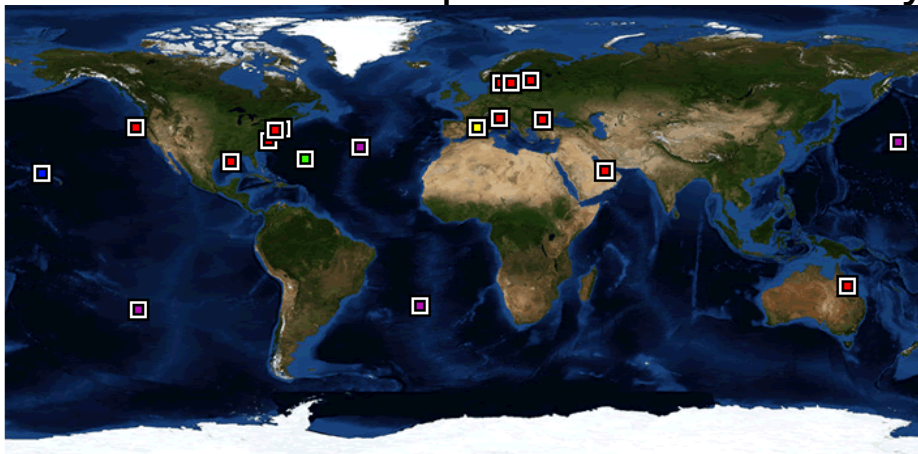
Preparing Tactical Ocean Optical Products from Future Polar - Orbiting NAVO readiness Sensors for NPP



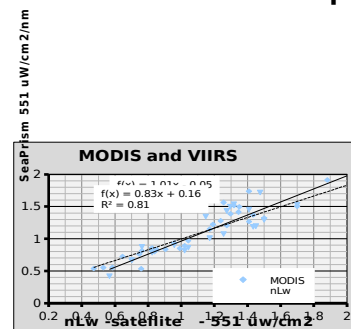
- Readiness for NPP processing - Proxy data stream and NAVO Processing (APS V4.2 running)



- Global network validation sites established
automated NPP product uncertainty



Validation and products uncertainty





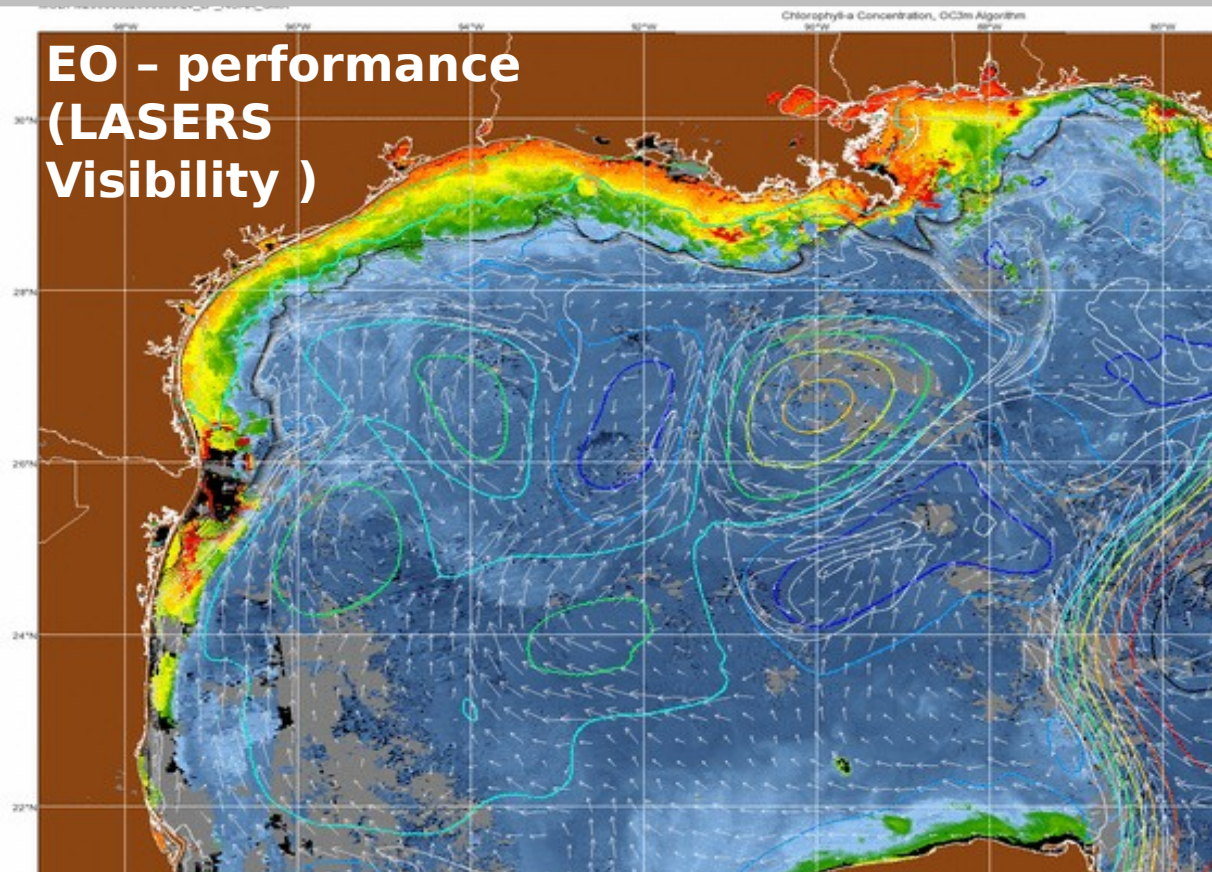
Preparing Tactical Ocean Optical Products from Future Polar - Orbiting Sensors



- Satellites (NPP) Ocean color products for water quality
 - MODIS , MERIS , NPP,
 - EO performance, MCM ,ASW , Diving Operations ,Spec War
 - Tracking surface signatures, currents, water masses,

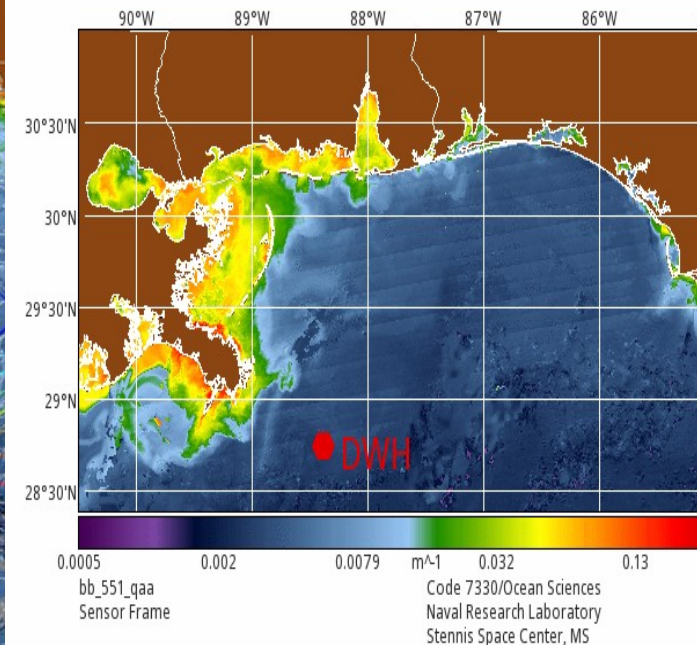
Nowcast (Combined satellite views)

**EO - performance
(LASERS
Visibility)**



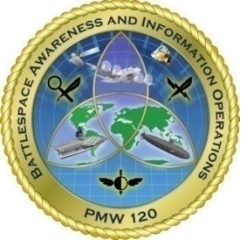
Forecast

aqua.2010255.0912.192006.D.L5_ADVECT.modis.MSB.v08.1000m_2010091219.nc



bb_551_qaa
Sensor Frame

Code 7330/Ocean Sciences
Naval Research Laboratory
Stennis Space Center, MS



Preparing Tactical Ocean Optical Products from Future Polar - Orbiting Sensors

Geostationary Ocean Color Imager GOCI Korea Satellite

Tracking water masses
In Strategic region
developing real time data flow

